

## REMARKS

### I. Introduction

Claims 9 to 11 and 13 to 17 are pending in the present application. In view of the foregoing amendments and the following remarks, it is respectfully submitted that the present application is in condition for immediate allowance, and reconsideration is respectfully requested.

### II. Rejection of Claims 14 and 15 Under 35 U.S.C. § 112, 1st ¶

Claims 14 and 15 were rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. It is respectfully submitted that these claims adequately comply with the written description requirement for at least the following reasons.

As to the contention that the term “raised pattern” does not appear in the disclosure and cannot be discerned from the original two-dimensional drawing perspective, the Examiner will note that Figure 2b, which is a top view of an embodiment of a particle sensor (1), clearly shows raised patterns along faces of measuring electrodes (10) and (15), and that Figures 2a and 2c, which are top views of further embodiments of a particle sensor (1), clearly show raised patterns along faces of finger electrodes (40). Accordingly, it is respectfully submitted that claims 14 and 15 adequately comply with the written description requirement for at least these reasons.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

### III. Rejection of Claims 9 to 11, 14 and 17 Under 35 U.S.C. § 103(a)

Claims 9 to 11, 14 and 17 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of PCT Application Publication No. WO 2004/097392 (“Berger et al.”) and U.S. Patent No. 4,916,384 (“Ishida”). It is respectfully submitted that the combination of Berger et al. and Ishida does not render these claims unpatentable for at least the following reasons.

Although Applicants may not agree with the merits of the rejection, to facilitate matters, claim 14 has been amended without prejudice to recite that at least one measuring electrode has a raised pattern along the finger electrodes.

Regarding claim 9, **neither Berger et al. nor Ishida discloses, or even suggests, the feature that at least one measuring electrode of a sensor for determining the concentration of particles in gases includes interdigitated finger electrodes having varying widths.** Contrary to the contentions appearing on page 3, lines 6 to 9 of the Final Office Action, Figures 2 to 4 of Berger et al., which are cross-sectional views of embodiments of a soot sensor, clearly show that interdigitated finger portions of comb electrodes (12, 13) are all of equal width. In addition, contrary to the contentions appearing on page 3, lines 9 to 12 of the Final Office Action, paragraphs [0015] and [0035] of U.S. Patent Application Publication No. 2007/0158191 (“Berger”) indicate that the thickness of protective layer (14), and not the width or area of the comb electrodes, can be up to 1/10 of the distance between comb electrodes (12, 13). The above-mentioned paragraphs of Berger do not imply anything regarding the width of the comb electrodes (12, 13). Ishida, in turn, describes an apparatus for measuring soot particles contained in the exhaust gas of a diesel engine, the measuring apparatus (A) including a frustoconical anode (13) and a needle-shaped cathode (12). However, the apparatus of Ishida does not include interdigitated finger electrodes of varying widths and, therefore, does not cure the deficiencies of Berger et al. with respect to at least the above-mentioned feature.

Furthermore, an essential aspect of the sensor of claim 9 is the asymmetrical electric field between the measuring electrodes. This field is generated by specially structuring the interdigitated comb electrodes, such that **the parallelism of the electrodes is minimized and the inhomogeneous region between the measuring electrodes is maximized.**

Accordingly, it is respectfully submitted that the combination of Berger et al. and Ishida does not render claim 9 unpatentable for at least these reasons.

As for claims 10, 11, 14 and 17, which depend from claim 9 and therefore include all of the features of claim 9, it is respectfully submitted that the combination of Berger et al. and Ishida does not render claim 9 unpatentable for at least these reasons.

Regarding claim 14, it is respectfully submitted that combination of Berger et al. and Ishida does not render this claim unpatentable for the following additional reasons. **Neither Berger et al., nor Ishida discloses, or even suggests, the feature of claim 14 that at least one measuring electrode has a raised pattern along the finger electrodes.** As is apparent from Figures 2 to 4 of

Berger et al., the cross-sections of interdigitated portions of comb electrodes (12, 13) form a pattern rising from a top surface of substrate layer (11). However, neither of the comb electrodes (12, 13) has a raised pattern along interdigitated finger portions of the respective electrode. The pattern shown in Figures 2 to 4 of Berger et al. is raised with respect to the substrate layer (11), and not with respect to the comb electrodes (12, 13) themselves. Furthermore, the raised pattern shown in Figures 2 to 4 of Berger et al. runs along a length dimension of the top surface of substrate layer (11), and not along finger portions of comb electrodes (12, 13). Accordingly, it is respectfully submitted that the combination of Berger et al. and Ishida does not render claim 14 unpatentable for these additional reasons.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

#### **IV. Rejection of Claims 13 and 15 Under 35 U.S.C. § 103(a)**

Claims 13 and 15 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Berger et al., Ishida and U.S. Patent No. 5,858,192 (“Becker et al.”). It is respectfully submitted that the combination of Berger et al., Ishida and Becker et al. does not render these claims unpatentable for at least the following reasons.

Although Applicants may not agree with the merits of the rejection, to facilitate matters, claim 13 has been amended without prejudice to recite that at least one of the measuring electrodes has a triangular cross-section, or the finger electrodes of at least one of the measuring electrodes have a triangular cross-section. Support for this amendment may be found, for example, on page 6, lines 10 to 13 of the Specification, and from page 3, line 16 to page 4, line 3 of the Specification, as well as in Figures 1a, 1b, 2b and 2c.

Claims 13 and 15 ultimately depend from claim 9 and therefore include all of the features of claim 9. As set forth in detail in Section III of this response, neither Berger et al., nor Ishida discloses, or even suggests, at least the feature of claim 9 that at least one of the measuring electrodes of a sensor for determining the concentration of particles in gases includes interdigitated finger electrodes having varying widths. Becker et al. describes an electrode array or arrays (5) including spaced electrode elements wound around each other to form a spiral shape (see Fig. 2B) or other shapes (see column 4, lines 10 to 12). In addition, the electrode elements may or may not be parallel to each other (see column 4, lines 12 to 15;

column 20, lines 13 to 14), and may be interdigitated (see column 4, lines 15 to 17). However, Becker et al. nowhere mentions interdigitated finger electrodes having varying widths. Therefore, Becker et al. does not cure the deficiencies of Berger et al. and Ishida with respect to at least the above-mentioned feature. Accordingly, it is respectfully submitted that the combination of Berger et al., Ishida and Becker et al. does not render unpatentable claims 13 and 15, which depend from claim 9.

Regarding claim 13, it is respectfully submitted that the combination of Berger et al., Ishida and Becker et al. does not render this claim unpatentable for the following additional reasons. Neither Berger et al., nor Ishida, nor Becker et al. discloses, or even suggests, the feature of claim 13 that at least one of the measuring electrodes has a triangular cross-section, or the finger electrodes of at least one of the measuring electrodes have a triangular cross-section. As indicated in column 4, lines 10 to 12 of Becker et al., the spiral electrode array (5) shown in Fig. 2B may be triangular in shape, but Becker et al. nowhere indicates that the electrode elements of array (5) have a triangular cross-section. In addition, Berger et al. and Ishida do not cure the deficiencies of Becker et al. with respect to the above-mentioned feature of claim 13. Accordingly, it is respectfully submitted that the combination of Berger et al., Ishida and Becker et al. does not render claim 13 unpatentable for these additional reasons.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

#### **V. Rejection of Claim 16 Under 35 U.S.C. § 103(a)**

Claim 16 was rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Berger et al., Ishida and U.S. Patent No. 6,634,210 (“Bosch et al.”). It is respectfully submitted that the combination of Berger et al., Ishida and Bosch et al. does not render this claim unpatentable for at least the following reasons.

Claim 16 depends from claim 9 and therefore includes all of the features of claim 9. As set forth above, neither Berger et al., nor Ishida et al. discloses, or even suggests, all of the features of claim 9. In addition, Bosch et al. is neither relied upon for disclosing or suggesting, nor does Bosch et al. disclose or suggest, all of the features of claim 9 not disclosed or suggested by the combination of Berger et al. and Ishida. Accordingly, it is respectfully submitted that the

combination of Berger et al., Ishida and Bosch et al. does not render unpatentable claim 16, which depends from claim 9.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

**VI. Conclusion**

It is therefore respectfully submitted that all of the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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By: /Clifford A Ulrich/  
Clifford A. Ulrich  
Reg. No. 42,194 for:  
Gerard Messina (Reg. No. 35,952)

KENYON & KENYON LLP  
One Broadway  
New York, New York 10004  
(212) 425-7200  
**CUSTOMER NO. 26646**